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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,990	11/21/2003	Rong-Chang Liang	07783.0013.NPUS00	9111

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EXAMINER
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HON, SOW FUN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 01/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/718,990

Applicant(s)

LIANG ET AL.

Examiner

Sow-Fun Hon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 19-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/21/03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/10/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-18, drawn to an article, classified in class 428, subclass 1.3.

II. Claims 19-49, drawn to a process, classified in class 349, subclass 190.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process can also comprise an additional step of adding a photosensitizer to the composition for the preparation of the microcup array.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Viola Kung on 11/30/04 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-18. Affirmation of this election must be made by applicant in replying to this Office action. Claims 19-49 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the

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currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being obvious over Chen et al. (US 6,545,797) in view of Thomas et al. (US 4,798,849).

The applied reference, US 6,545,797, has a common assignee, and inventor Rong-Chang Liang, with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For

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applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(1)(1) and § 706.02(1)(2).

Regarding claim 1, Chen teaches a composition for the preparation of microcups used in a display which composition comprises a thermoplastic or a thermoset precursor thereof (column 5, lines 5-10) and other additives (column 5, lines 20-25).

Chen teaches liquid crystals as filler materials (column 7, lines 10-20), but fails to teach that the liquid crystal filler is added to the composition for the preparation of the microcups used in the display.

Thomas teaches that a sufficient amount of liquid crystal can be dissolved or dispersed into the bulk polymer to provide property or processing improvement (column 10, lines 49-55), whereby significant and unexpected improvements in the physical properties of the bulk polymer (column 2, lines 55-60), without major losses in other properties (column 2, lines 6-11)

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have incorporated the liquid crystal filler as part of the microcup composition of Chen, in order to obtain a microcup array with the desired physical strength and processibility, as taught by Thomas.

Chen teaches that the process and apparatus for manufacturing electrophoretic displays (EPD) (column 1, lines 60-70) are also useful for manufacturing liquid crystal displays (LCD) (column 2, lines 10-20).

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Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used the used the composition for the preparation of microcups used in a liquid crystal display, as taught by Chen.

Regarding claim 2, Chen teaches that the microcup composition is embossed (column 8, lines 35-45).

Regarding claim 3, Chen in view of Thomas has been discussed above. Furthermore, Thomas teaches that a sufficient amount of liquid crystal can be dissolved into the bulk polymer to provide property or processing improvement (column 10, lines 50-60). Hence the liquid crystal has a concentration no greater than its solubility limit in the microcup composition.

Regarding claim 4, Chen teaches that the microcup composition precursor comprises a multifunctional acrylate or methacrylate, vinyl ether, epoxide (column 5, lines 5-15) and an oligomer or polymer thereof (column 5, lines 20-25).

8. Claims 5-9, 14-17 are rejected under 35 U.S.C. 103(a) as being obvious over Morita et al. (US 6,400,492) in view of Oguchi et al. (US 6,650,384).

Regarding claims 5, 7-8, 14-16, Morita teaches a composition (matrix material) for the preparation of cells used in a display (column 15, lines 45-55). The cells constitute microcups. The composition comprises a thermoplastic (polyethylene, polypropylene) (column 15, lines 50-55), a thermoset or a precursor (polymerizable compound) thereof (column 16, lines 5-15), and poly(ethylene glycol) diacrylate (column 16, line 43), which is a speed enhancing comonomer as, defined by Applicant's specification (original claims 8, 16).

Morita fails to teach a liquid crystal display.

Oguchi teaches that electrophoretic display technology and its display method can be applied to liquid crystal displays (column 1, lines 14-19), in order to achieve a full color display provided by the liquid crystal display method, while maintaining the high contrast provided by the electrophoresis display method (column 2, lines 33-37).

Morita teaches an electrophoretic display (abstract).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used the electrophoretic display technology, and hence the microcup matrix composition of Morita in a liquid crystal display, in order to obtain a display with both the full color of liquid crystal display technology, and the high contrast of electrophoretic display technology, as taught by Oguchi.

Regarding claim 6, Morita teaches that the composition contains a thermoplastic (polyethylene, polypropylene) (column 15, lines 50-55), which renders the composition embossable due to the thermoplasticity.

Regarding claims 9, 17, Morita teaches that the thermoset precursor can be a multifunctional acrylate (pentaerithritol triacrylate), the methacrylate being a homolog, epoxide (epoxy) and an oligomer or polymer thereof (column 16, lines 40-50).

Claims 10-13 are rejected under 35 U.S.C. 103(a) as being obvious over Chen in view of Thomas and Schmidt (CA 2340683).

The applied reference, US 6,545,797, has a common assignee, and inventor Rong-Chang Liang, with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed

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but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Regarding claims 10, 13, Chen teaches a composition for the preparation of microcups used in a display which composition comprises a thermoplastic or a thermoset precursor thereof (column 5, lines 5-10) and other additives (column 5, lines 20-25).

Chen teaches liquid crystals as filler materials (column 7, lines 10-20), but fails to teach that the liquid crystal filler is added to the composition for the preparation of the microcups used in the display.

Thomas teaches that a sufficient amount of liquid crystal can be dissolved or dispersed into the bulk polymer to provide property or processing improvement (column 10, lines 49-55), whereby significant and unexpected improvements in the physical properties of the bulk polymer (column 2, lines 55-60), without major losses in other properties (column 2, lines 6-11)



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Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have incorporated the liquid crystal filler as part of the microcup composition of Chen, in order to obtain a microcup array with the desired physical strength and processibility, as taught by Thomas.

Chen teaches that the process and apparatus for manufacturing electrophoretic displays (EPD) (column 1, lines 60-70) are also useful for manufacturing liquid crystal displays (LCD) (column 2, lines 10-20).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used the used the composition for the preparation of microcups used in a liquid crystal display, as taught by Chen.

Chen fails to teach two or more layers of the microcup array.

Schmidt teaches an electrophoretic display wherein the arrangement of the microcups (cavities in the microcompartment film) should be strictly regular, or array-like, and can be arranged in rows and columns as illustrated in Fig. 2 of Schmidt (page 6, lines 5-15). An arrangement of rows and columns is an arrangement of two or more layers of microcup array (claim 10). Fig. 2 of Schmidt shows that that the layers can be arranged in a staggered manner (clam 13).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have an arrangement of two or more layers of microcup array taught by Schmidt, in the liquid crystal display of Chen, in order to obtain a liquid crystal display with the desired viewing properties.

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Regarding claim 11, Chen in view of Thomas has been discussed above. Furthermore, Thomas teaches that a sufficient amount of liquid crystal can be dissolved into the bulk polymer to provide property or processing improvement (column 10, lines 50-60). Hence the liquid crystal has a concentration no greater than its solubility limit in the microcup composition.

Regarding claim 12, Chen teaches that the microcup composition precursor comprises a multifunctional acrylate or methacrylate, vinyl ether, epoxide (column 5, lines 5-15) and an oligomer or polymer thereof (column 5, lines 20-25).

Claim 13 has been discussed above.

9. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morita in view of Oguchi as applied to claims 5-9, 14-17 above, and further in view of Schmidt (CA 2340683).

Morita in view of Oguchi has been discussed above, and fail to teach that two or more layers of the microcups are arranged in a staggered manner.

Schmidt teaches an electrophoretic display wherein the arrangement of the microcups (cavities in the microcompartment film) should be strictly regular, and can be arranged in rows (layers) and columns as illustrated in Fig. 2 of Schmidt (page 6, lines 5-15). An arrangement of rows and columns is an arrangement of two or more layers of microcup array. Fig. 2 of Schmidt shows that that the layers can be arranged in a staggered manner.

Morita in view of Oguchi teaches the composition (matrix material) for the preparation of microcups (cells) in a liquid crystal display using electrophoretic display technology.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used the staggered layer arrangement taught by Schmidt, for the

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microcups of Morita in view of Oguchi, in order to obtain the desired display fluid containment and optical display characteristics.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sow-Fun Hon

12/10/04